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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/821,161	04/07/2004	Paul F. Meier	33965US1	9187
7590	11/13/2006		EXAMINER	
Richmond, Hitchcock, Fish & Dollar PO Box 2443 Bartlesville, OK 74005			DOUGLAS, JOHN CHRISTOPHER	
			ART UNIT	PAPER NUMBER
			1764	

DATE MAILED: 11/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/821,161	Applicant(s) MEIER ET AL.
	Examiner John C. Douglas	Art Unit 1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.  
 If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.  
 Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) Responsive to communication(s) filed on 29 August 2006.  
 2a) This action is FINAL.      2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) Claim(s) 1-34 is/are pending in the application.  
 4a) Of the above claim(s) 21-34 is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-20 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
     1. Certified copies of the priority documents have been received.  
     2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
     3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
 \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date _____. 5) <input type="checkbox"/> Notice of Informal Patent Application 6) <input type="checkbox"/> Other: _____.
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## DETAILED ACTION

1. Examiner acknowledges the response filed on 8/29/2006 containing remarks.
2. Applicant's arguments, see remarks, filed on 8/29/2006, with respect to the rejection(s) of claim(s) 1-20 under 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made:

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-12 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koves (US 6146519) in view of Khare (US 5914292).

7. With respect to claims 1, 6, and 7, Koves discloses a process for contacting hydrocarbon vapors with fluidized catalyst particles in a riser that comprises a series of redistribution sections (see Koves, column 1, lines 12-16, column 3, lines 36-50, column 4, lines 11-26 and Figures 1 and 2). Also, Koves discloses that solid particles and light hydrocarbons are introduced at the bottom of the vessel in order to form fluidized catalyst (see Koves, column 4, lines 46-67).

Koves does not disclose where the gaseous feed contains a sulfur-containing hydrocarbon, does not disclose where the disengagement zone is broader than the reaction zone, and Koves does not disclose transferring sulfur from the hydrocarbon to the fluidized sorbent particles.

However, Khare discloses circulating a sorbent material with a stream containing sulfur and to remove sulfur from the fluid stream and that the disengagement zone is broader than the reaction zone (see Khare, column 3, lines 11-16, column 10, lines 28-47 and Figure 2).

Khare discloses that the removal of sulfur can be necessary to meet sulfur emission requirements (see Khare, column 1, lines 23-27).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the process of Koves to include circulating a sorbent material with a stream containing sulfur and to remove sulfur from the fluid stream in order for a hydrocarbon to sulfur emission requirements.

8. With respect to claim 2, Khare discloses where the solid sorbent particles have a mean particle size from about 20 to about 500 micrometers (see Khare, column 2, lines 63-67).

9. With respect to claim 3, Khare discloses where the velocity of the fluidization gas is in the range of from about 0.15 ft/s to about 20 ft/s (see Khare, column 11, lines 49-60).

10. With respect to claim 4, Khare discloses where the particles have a mean particle size from about 20 to about 500 micrometers (see Khare, column 2, lines 63-67) and where the particles have a bulk density of about 0.9 to 1.01 (see Khare, column 14, Table 1). According to Applicant's specification, particles with the above size and density qualify the solid sorbent particles as a Group A under the Geldart group classification system (see Specification page 12, lines 1-9).

11. With respect to claim 5, Koves discloses where the fluidized bed is above the catalyst inlet (see Koves, Figure 1).

12. With respect to claims 8 and 9, Koves discloses where catalyst is withdrawn above the feed inlet and where both the feed inlet and the catalyst withdrawal are below the baffles (see Koves, column 5, lines 34-40 and Figure1).

13. With respect to claim 10, Khare discloses where the sorbent contains nickel (see Khare, column 5, lines 25-39).

14. With respect to claim 11, Khare discloses where the sorbent comprises zinc oxide and where the zinc oxide is converted to zinc sulfide to form sulfur loaded particles (see Khare, column 11, line 1).

15. With respect to claim 12, Khare discloses where the sulfur-loaded particles are regenerated with oxygen (see Khare, column 11, lines 1-5 and column 12, lines 52-65).

16. With respect to claim 19, Koves does not disclose the height to weight ratio of the reactor and fluidized bed. However, changes in shape are a matter of choice which a person of ordinary skill in the art at the time of the invention would have found obvious absent persuasive evidence that the particular configuration of the claimed container was significant (see MPEP 2144.04IV. B., citing *In re Dailey*, 357 F.2d 669 (CCPA 1966)).

17. Claims 13-15 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koves in view of Khare as applied to claim 12 above, and further in view of Khare (US 6184176), hereinafter "Khare 2". Koves in view of Khare disclose everything in claim 12 (see paragraph 15) and Khare discloses where the regenerated catalyst is recycled back to the reactor (see Khare column 13, lines 54-66) and where the sorbent contains a promoter metal component comprising nickel (see Khare, column 5, lines 25-

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39) but do not disclose where the regenerated sorbent is sent to a reducer where hydrogen reduces the valence of the promoter metal.

However, Khare 2 discloses subjecting a promoter metal to a reduction step where the metal is contacted with hydrogen in order to reduce the valence of the promoter metal (see Khare 2, column 5, lines 59-67).

Khare 2 discloses where the promoter metal having reduced valence permits removal of sulfur from a cracked-gasoline stream or diesel-fuel stream (see Khare 2, column 5, line 65 – column 6, line 3).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the process of Koves in view of Khare to include subjecting a promoter metal to a reduction step where the metal is contacted with hydrogen in order to reduce the valence of the promoter metal to permit the removal of sulfur from cracked-gasoline or diesel fuel.

18. Claims 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koves in view of Khare as applied to claim 1 above, and further in view of Walker (US 2931711). Koves in view of Khare disclose everything in claim 1 (see paragraph 6) and Koves discloses where the reactor contains grids that each contain a series of parallel elongated baffles (see Koves, column 4, lines 41-54, column 7, lines 12-32 and Figures 1-4).

Koves in view of Khare do not disclose where the baffles of each grid are not parallel to baffles in other grids and create angles in the range from about 60 to about 120 degrees.

However, Walker discloses a reactor having stacked trays that each have parallel tubes and that the trays can be arranged so that the tubes of other trays are not parallel with other tubes in different trays and form angles between greater than 0 up to about 90 degrees (see Walker, column 3, lines 1-23 and 54-63 and Figures 2-6).

Walker discloses that such a configuration aides in fluidization of a reactor (see Walker, column 1, lines 56-72).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the process of Koves in view of Khare to include a reactor having stacked trays that each have parallel tubes and that the trays can be arranged so that the tubes of other trays are not parallel with other tubes in different trays and form angles between greater than 0 up to about 90 degrees in order to aide in reactor fluidization.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John C. Douglas whose telephone number is 571-272-1087. The examiner can normally be reached on 7:30 A.M. to 4:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Calderola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JCD

10/30/2006



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